DOCUMENT RESUME

ED 141 710 CG 011 537

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TITLE Transcendental Meditation and Creativity: An Empirical Investigation.
PUB DATE Apr 76
NOTE 15p.; Paper presented at the Annual Meeting of the Western Psychological Association (Los Angeles, California, April 8-11, 1976)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Adults; *Creativity; *Creativity Research; Imagination; Individualism; Originality; Research Projects; *Self Expression; *Talent Development
IDENTIFIERS *Transcendental Meditation

ABSTRACT

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ED141710

Paper given at the Western Psych. Assoc. Meeting, Los Angeles, 4/76

Shortened version to appear in Journal of Applied Psychology, 1977

Transcendental Meditation and creativity: an empirical investigation

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Abstract

One of the claimed benefits of Transcendental Meditation is increased creativity, although the literature neither supports nor negates such a claim. Four groups of 35 subjects each were studied over a six-month period and administered a battery of five creativity measures, both before and after the study period. One group of adults was enrolled in a Transcendental Meditation program; a second group of adults participated in a relaxation response program whose primary focus is the learning of a relaxed meditation technique; a third group, composed of college students, practiced within a Psychology of Creativity course, a variety of creativity enhancing techniques; finally, a fourth group of adults underwent no special treatment. Significant pre-post increases were obtained on four of the five creativity measures for only the Psychology of Creativity group, with no differences for the TM, the relaxation response, and the no treatment group. The claim that the practice of meditation leads to increased creativity is not supported.

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Transcendental Meditation and creativity: an empirical investigation

The nature and extent of physiological changes concomitant with the practice of meditation appear to be relatively well documented (e.g., Benson et al. 1975; Wallace, 1970; Younger et al., 1975). Not so with psychological changes. In particular, increased creativity is among the most visible but unsubstantiated claimed benefits of Transcendental Meditation (TM). Not only does the TM promotional literature profusely use phrases such as "science of creative intelligence" but suggests that through TM one can experience a creative state of mind. Although the degree of overlap between the concept of "creative intelligence" as heralded by TM proponents and the label of creativity as used in the psychological literature is unclear, the implication is that TM leads to increased creativity; such overlap is already beginning to surface in the psychological literature (e.g., Shafii, 1973).

Despite such claims there is little relevant evidence in the growing professional literature about the effects of meditation. A study cited by TM proponents as evidence of increased creativity is one by Seeman, Nidich, and Banta (1972) who administered the Personal Orientation Inventory (POI) to 15 undergraduates trained to meditate and 20 controls, in a pre- and post- design over a two month interval. Significant changes in the direction of greater self-actualization were observed in the experimental group for six of the 12 POI scales. The POI (Shostrom, 1966) represents an attempt to measure the theoretical construct of self-actualization as found in the writings of Maslow, May, Riesman and others. Self-actualization is related to creativity on both theoretical and, as operationalized in the POI, empirical grounds (e.g., Gerber, 1964; Otto, 1967; Weis, 1966) but is not necessarily synonymous with creativity.

The findings of the Seeman et al. study are rather limited at best due to the small number of subjects, the lack of information

about them (e.g., were they volunteers ? freshmen ? were controls matched on relevant variables ?), the paucity of information about the meditation program, the short time period, the failure to take into account the substantial item overlap of the POI scales, and other aspects. Similar comments apply to a subsequent replication (Nidich, Seeman, & Dreskin, 1973) with an even smaller sample of subjects (nine meditators and nine controls) and a shorter time span (ten weeks).

In a discursive article, Schwartz (1974) reports a study of 16 teachers of meditation and 16 controls using the Barron-Welsh Art Scale and Wallace-Kogan creativity tests. No statistical results are given, but Schwartz indicates that "surprisingly, the meditators scored no better than the nonmeditators. On some scales in fact, the meditators did consistently worse". In a similar vein, Otis (1974) worked with 62 volunteers who were randomly assigned to either TM or control groups. After three months all volunteers filled out a self-assessment questionnaire; the results (although again no data are presented) indicated that meditators subjectively felt an increase in creativity, among other changes, but on the basis of additional evidence Otis indicates that he does not believe that TM alters basic personality aspects such as creativity.

Finally, in a tangentially related study, Linden (1973) investigated the effects of meditation on school children. Children in a meditation group meeting for 36 sessions showed an increase in field independence and a decrease in test anxiety as compared to two control groups. Linden concluded that meditation is effective in helping the individual to focus his attention and to shift to a state characterized as relaxed alertness.

The current study was undertaken in an attempt to empirically investigate the hypothesized relationship between the practice of TM and increased creativity.

Method

Subjects

Four groups of 35 subjects each were studied over a six month period with a pre- and post- administration of a battery of creativity measures. Group 1, the TM group, consisted of 35 adults (21 males, 14 females) actively involved over a six month period in TM. Approximately 150 adults were individually contacted as they attended introductory lectures on TM; of these 89 volunteers were tested within one week of the introductory lecture, and 35 remainers in the program were retested at the end of six months. Demographically, the 35 participants can be described as white (32), college educated (29), employed (23), and young (median age 27); the group included different occupational levels from a physician to an unemployed mechanic, single, married, divorced, and widowed individuals, and differing religious and ethnic backgrounds.

A second group, the relaxation response group, consisted of 35 participants in a six month relaxation program based on the work of Benson (1974; Benson, Beary, & Carol, 1974). This program simply requires a quiet, distraction free environment, the repetition of a single syllable sound ("one" is suggested and was employed), a passive attitude, and a comfortable position. The volunteers for this program came from a variety of sources including adult education courses, a faculty wives' group, a community social club, a labor union, and individual referrals. Of the 46 adults tested initially, 37 completed the six month program; the protocols of two subjects were randomly eliminated. This group was also rather heterogeneous but not substantially different from the TM group. Of the 35 final subjects, 19 were males and 16 females, with the majority also white (34), college educated (20), employed on a full time basis (28), and relatively young (median age 30).

The third group consisted of 35 college students randomly drawn from a larger pool of 73 students enrolled in a course on the Psychology of Creativity. The course met twice weekly, one meeting devoted to academic topics, the other to a demonstration and practice of a

variety of techniques related theoretically and/or empirically to creativity. These techniques included hypnosis, role-playing, dream analysis, brainstorming, lateral thinking, and forced-relationship techniques (Whiting, 1958). This group, 24 males and 11 females, was substantially more homogeneous; they were juniors (23) or seniors (12), white (32), between the ages of 19 and 25 (32), and psychology majors (28).

Finally, group 4 was a control group of 35 adults similarly tested and retested with a six month interval but undergoing no special procedures. These adults were also volunteers, drawn from a larger pool of 58, whose cooperation was obtained through a variety of channels. The 35 adults for whom completed protocols were available consisted of 19 males and 16 females, white (34), college educated (26), employed (22), and between the ages of 20 and 32 (28); none had ever practiced meditation.

Instruments

Participating subjects were tested individually or in groups no larger than seven, except for students in the creativity course who were tested as a class. All subjects were administered these tests:

a) Remote Associates Test (RAT; Mednick & Mednick, 1967), a measure that has been used extensively in creativity research and represents an operational implementation of an associative theory of the creative process. The RAT consists of 30 triads to which the subject must respond with a word that fits the associative requirements of the triad.

b) Adjective Check List Creativity Scale (ACL Cr.; Gough & Heilbrun, 1965). The ACL contains 300 adjectives that the subject checks if self-descriptive. ACL protocols were scored for the 59 item Cr. scale developed by Domino (1970). Although this scale is relatively new, some independent support of its validity as a measure of creativity exists (Albaum, 1975).

c) Barron-Welsh Revised Art Scale (BW-RA; Barron, 1953). This is a subset from the Welsh Figure Preference Test (Welsh, 1959), originally developed by contrasting the responses of artists and nonartists. The respondent indicates whether he likes or dislikes each of the 60 designs; there is some evidence to suggest that responses to the BW-RA are indicative of creativity (e.g., Schaefer, 1968).

d) Franck Drawing Completion Test (FDCT; Franck & Rosen, 1949). The FDCT consists of incomplete drawings that the subject is asked to complete as he wishes. The FDCT was originally developed as a projective measure of masculinity-femininity, but a number of studies have shown its applicability to the domain of creativity (e.g., Anastasi & Schaefer, 1971; Barron, 1958; Domino, 1973). For the present study the first 12 stimulus drawings of the FDCT were administered and scored on originality using the guidelines presented by Anastasi and Schaefer (1971).

e) Similes Test (ST; Schaefer, 1969) which asks the subject to think of three different and imaginative endings for each of ten incomplete sentences, within a 15 minute time limit.

Analysis

All test protocols were coded and scored independently by judges not aware of the purpose of the study nor of the nature of the subjects.[1] The data were subjected to an ANOVA design, following the logic described by Guilford (1965, Pp. 194-197) for testing the differences between changes with experimental and control groups. Specific comparisons were then assessed using the Duncan multiple range test (Winer, 1962, Pp. 85-87) and appropriate *t* tests.

Results

The means and S.D.s for each of the four groups on the five measures of creativity are given in Table 1.

Table 1 here

No significant differences were obtained on any of the pre-test means, using one-way ANOVA across groups for each of the creativity measures. On the post-test means however, significant F ratios were obtained on the ACL Cr. scale (3, 136 F=5.04, $p < .002$), the BW-RA (3, 136 F=2.61, $p < .05$), the FDCT (3, 136 F=9.30, $p < .001$), and the ST (3, 136 F=11.7, $p < .001$). An application of the Duncan Multiple Range test and a *t* test analysis indicated in each case that the post-test means for the Creativity Course group were significantly different from the post-test means of the other three groups and from their own pre-test means, but that the means of the other three groups did not differ significantly from each other or from their respective pre-test means.

Discussion

The results clearly do not support the notion that the practice of TM, for at least a six month period, results in increased creativity. In particular, it should be noted that the subjects practicing TM had, by their willingness to continue in the TM program for at least six months, shown some motivation to engage in TM and were not captive subjects. In addition, the TM program was carried independently of the author and represented a commercially available procedure rather than an experimentally imposed one. Not only does TM not improve creativity, but the practice of meditation divested of its religious and mystical trappings, i.e., the relaxation response group, does not increase creativity as measured psychometrically.

The measurement of creativity is certainly not a highly refined enterprise and one may argue that the measures used in this study, although representative of available instruments, are not tapping "true" creativity. If indeed this is the case, the burden of proof rests on those who espouse such an argument. Aside from practical considerations such as ease of administration, the instruments chosen for this study were selected purposely to tap varied aspects of

creativity. The RAT for example, requires convergent thinking. The ACL Cr. scale attempts to measure a personality constellation. Neither the BW-RA nor the FDCT require a verbal response, while the ST does; all three reflect divergent thinking. At least three of the measures (RAT, FDCT, and ST) require the production of actual creative or original responses, as opposed to personality measures that require a self-assessment that may or may not be veridical. Although the validity of at least some of these scales has not been fully explored, a correlational analysis indicates that whatever they may be tapping they are doing so in a cohesive manner. A correlational matrix generated for all 140 subjects, with both pre- and post-measures yielded r values ranging from +.32 to +.82 (all significant, $p < .001$).

Two of the measures, the FDCT and the ST, require some clinical judgment in the scoring and therefore inter-rater reliability becomes a concern. For the present study, all protocols were independently scored by three experienced judges and scores used in the analyses represented the median of scores assigned. Inter-rater reliability coefficients ranged from +.82 to +.89 representing quite acceptable levels.

It is not the intent of this study to suggest that creativity can be increased through an academic course in the Psychology of Creativity, even though the significant changes evidenced by this group are quite dramatic. The course was a naturally occurring group and although its utilization as a control group is quite justifiable, it is less justifiable as an experimental group. The various procedures used in the course seem to have some validity (cf. Stein, 1974) but their use was intended to be illustrative rather than productive of actual change. The obtained changes may be indicative of changes in test-taking skills rather than in creativity.

Certainly a number of limitations temper the present results. The four groups were self-selected rather than reflect random

assignment. The problem of volunteer characteristics is unresolved, though where available data permitted comparisons between those who remained in a program versus those who did not, no significant differences on creativity test scores were obtained. Nevertheless, the present results strongly suggest that any claims of increased creativity through meditation remain unsupported by evidence.

References

Albaum, G. Validation of a creativity scale for the Adjective Check List. Unpublished manuscript, University of Oregon, 1975.

Anastasi, A. & Schaefer, C. The Franck Drawing Completion Test as a measure of creativity. Journal of Genetic Psychology, 1971, 119, 3-12.

Barron, F. Complexity-simplicity as a personality dimension. Journal of Abnormal and Social Psychology, 1953, 48, 163-172.

Barron, F. The psychology of imagination. Scientific American, 1958, 199, 150-156.

Benson, H. Your innate asset for combating stress. Harvard Business Review, 1974, 52, 49-60.

Benson, H. et al. Continuous measurement of O_2 consumption and CO_2 elimination during a wakeful hypometabolic state. Journal of Human Stress, 1975, 1, 37-44.

Benson, H., Beary, J., & Carol, M. The relaxation response. Psychiatry, 1974,

Domino, G. Identification of potentially creative persons from the Adjective Check List. Journal of Consulting and Clinical Psychology, 1970, 35, 48-51.

Domino, G. Homosexuality and creativity. Paper presented at the American Psychological Association Convention, Montreal, 1973.

Franck, K. & Rosen, E. A projective test of masculinity-femininity. Journal of Consulting Psychology, 1949, 13, 247-256.

Gerber, B. A study of relationships between psychological health and creativity. Unpublished doctoral dissertation. Syracuse University, 1964.

Gough, H. G. & Heilbrun, A. B. Jr. Manual for the Adjective Check List. Palo Alto, California: Consulting Psychologists Press, 1965.

Guilford, J. P. Fundamental statistics in psychology and education (Fourth edition). New York: McGraw Hill, 1965.

Linden, W. Practicing of meditation by school children and their levels of field dependence-independence, test anxiety, and reading achievement. Journal of Consulting and Clinical Psychology, 1973, 41, 139-143.

Mednick, S. & Mednick, M. Examiner's manual: Remote Associates Test. Boston: Houghton Mifflin, 1967.

Nidich, S., Seeman, W., & Dreskin, T. Influence of transcendental meditation: a replication. Journal of Counseling Psychology, 1973, 20, 565-566.

Otis, L. The facts on transcendental meditation: Part III. Psychology Today, 1974, 7, 45-46.

Otto, B. M. Anxiety, creativity and self-actualization. Unpublished masters thesis. California State College, Long Beach, 1967.

Schwartz, G. The facts on transcendental meditation: Part II. Psychology Today, 1974, 7, 39-44.

Seeman, W., Nidich, S., & Banta, T. Influence of transcendental meditation on a measure of self-actualization. Journal of Counseling Psychology, 1972, 19, 184-187.

Shafii, M. Adaptive and therapeutic aspects of meditation. International Journal of Psychoanalytic Psychotherapy, 1973, 2, 364-382.

Shostrom, E. L. Personal Orientation Inventory. San Diego: Educational and Industrial Testing Service, 1966.

Stein, M. Stimulating Creativity. (Volume 1). New York: Academic Press, 1974.

Wallace, R. K. Physiological effects of transcendental meditation. Science, 1970, 167, 1751-1754.

Weis, S. J. F. An exploratory study of the nature of the occurrence of creativity and self-actualization among college students making vocational selections in the home economics field. Unpublished masters thesis. Pennsylvania State University, 1966.

Welsh, G. Welsh Figure Preference Test preliminary manual. Palo Alto, California: Consulting Psychologists Press, 1959.

Whiting, C. Creative thinking. New York: Reinhold, 1958.

Winer, B. J. Statistical principles in experimental design. New York: McGraw Hill, 1965.

Younger, J., Adrianne, W., & Berger, R. Sleep during transcendental meditation. Perceptual and motor skills, 1975, 40, 953-954.

Footnotes

[1] I am grateful to the many colleagues who, directly or indirectly, assisted with this study, especially C. Colell, J. Palladino, L. Darcy, and G. Kelly, and to the University of Arizona Computer Center.

Table 1

Means and SDs on creativity measures for four groups (N = 35 per group)

Creativity Measures:	Groups							
	T.M.		Relaxation Response		Creativity Course		Control	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Remote Associates								
M	15.9	16.0	15.7	15.6	15.8	15.7	15.3	15.1
SD	5.2	4.8	5.5	5.3	5.4	6.0	5.2	4.4
Adj. Check List								
M	52.9	53.3	50.3	50.6	49.6	57.3*	49.7	50.4
SD	11.3	9.8	8.8	7.2	9.1	7.8	10.0	8.9
Barron-Welsh Rev. Art Scale								
M	38.1	38.3	39.2	39.5	35.0	43.7*	38.0	38.4
SD	9.5	7.9	10.5	10.2	10.8	9.9	10.5	8.9
Franck Drawings								
M	22.2	21.7	23.1	23.1	22.5	29.6*	24.1	24.0
SD	8.6	6.6	7.6	6.6	7.4	5.6	7.8	7.7
Similes								
M	55.1	54.5	58.4	58.5	55.0	69.8*	55.9	55.6
SD	14.5	13.0	15.8	12.7	15.2	9.6	14.4	12.8

* $p < .05$ on the Duncan Multiple Range Test and t test; these post test means differ significantly from the post-test means of the other groups and the respective pre-test means